AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-8 (Canceled).

Claim 9 (Currently amended) A spatial light modulator comprising:

a first set of controllable optical elements to create a data encoded object beam from ~~an interior~~ a perimeter portion of an input light beam; and

a second set of controllable optical elements ~~perimeter reference zone positioned around the set of controllable optical elements~~ to create a reference beam from an interior ~~perimeter~~ portion of the input light beam.

Claim 10 (Currently amended) The spatial light modulator of claim 9, wherein the second set of controllable optical elements are controlled to define ~~perimeter reference zone comprises~~ a reference mask.

Claim 11 (Currently amended) The spatial light modulator of claim 9, wherein the second set of controllable optical elements ~~perimeter reference zone~~ optically adjusts one or more optical characteristics of the interior ~~perimeter~~ portion of the input light beam.

Claim 12 (Currently amended) The spatial light modulator of claim 9, wherein the second set of controllable optical elements ~~perimeter reference zone~~ optically adjusts a phase of the interior ~~perimeter~~ portion of the input light beam.

Claim 13 (Currently amended) The spatial light modulator of claim 9, wherein the second set of controllable optical elements ~~perimeter reference zone~~ optically adjusts a polarization of the interior ~~perimeter~~ portion of the input light beam.

Claim 14 (Currently amended) The spatial light modulator of claim 9, wherein the first and second sets ~~set~~ of controllable optical elements include transmissive optical elements ~~and the perimeter reference zone comprises a non-controllable transmissive optical element~~.

Claim 15 (Currently amended) The spatial light modulator of claim 9, wherein the first and second sets ~~set~~ of controllable optical elements include reflective optical elements ~~and the perimeter reference zone comprises a non-controllable reflective optical element~~.

Claim 16 (Currently amended) The spatial light modulator of claim 9, further comprising a control unit to control the first and second sets ~~set~~ of controllable optical elements ~~and define bit maps in the data encoded object beam for storage as holograms~~.

Claim 17 (Currently amended) A method comprising:

creating a data encoded object beam from a perimeter portion of an input light beam using ~~a spatial light modulator that includes~~ a first set of controllable optical elements of a spatial light modulator; and

creating a reference beam from an interior portion of the input light beam using a second set of controllable optical elements of the spatial light modulator.

Claim 18 (Canceled).

Claim 19 (Currently amended) A holographic data storage system comprising:

a holographic medium; and

a spatial light modulator including a first set of controllable optical elements to create a data encoded object beam from ~~an interior~~ a perimeter portion of an input light beam, and a second set of controllable optical elements ~~perimeter reference zone positioned around the set of controllable optical elements~~ to create a reference beam from an interior ~~perimeter~~ portion of the input light beam, wherein the data encoded object beam and reference beam interfere in the holographic medium to create a hologram.

Claim 20 (New) The system of claim 19, wherein the second set of controllable optical elements are controlled to define a reference mask.

Claim 21 (New) The system of claim 19, wherein the second set of controllable optical elements optically adjusts one or more optical characteristics of the interior portion of the input light beam.

Claim 22 (New) The system of claim 19, wherein the second set of controllable optical elements optically adjusts a phase of the interior portion of the input light beam.

Claim 23 (New) The system of claim 19, wherein the second set of controllable optical elements optically adjusts a polarization of the interior portion of the input light beam.

Claim 24 (New) The system of claim 19, wherein the first and second sets of controllable optical elements include transmissive optical elements.

Claim 25 (New) The system of claim 19, wherein the first and second sets of controllable optical elements include reflective optical elements.

Claim 26 (New) The system of claim 19, further comprising a control unit to control the first and second sets of controllable optical elements.